POTENTIAL LINE STRUCTURE VARIABILITY IN DIB FEATURES OBSERVED IN PATHFINDER TRES SURVEY

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The Diffuse Interstellar Bands (DIBs) are hundreds of spectral lines observed in sightlines towards many stars in the optical and near-infrared. Although most of these transitions remain unassigned, four of them have recently been assigned to C_{60}^{+} and C_{70}^{+}. In earlier observations of the visible spectrum of the extragalactic supernova SN 2012ap, we observed changes in the equivalent widths of DIBs on the timescale of its light curve, which indicated that some DIB carriers might exist closer to massive stars then previously believed. Motivated by these findings, we undertook a pathfinder survey of 17 massive stars with the Tillinghast Reflector Echelle Spectrograph at Fred L. Whipple Observatory in search of temporal variability in DIBs. In 3 of the 17 stars, we found possible evidence for variation in line substructure of DIBs λ5797 and λ6614. In this talk, we will discuss our efforts to model λ5797 toward MT-59 using contour simulations based on previously published spectral models from higher resolution observations. Although the SNR of this spectrum was only 5–15, our preliminary results suggest that the variations in molecular spectra over time might arise from changes in carrier temperature. These early results demonstrate the need for higher SNR spectra taken at multiple epochs to further explore potential temporal variability. If successful, time-variation could provide additional evidence to assist in identifying DIB carriers.